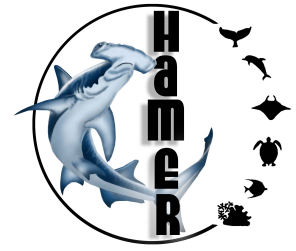


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April 25, 2016

NOAA/NMFS  
Federal Rule Making  
ID: NOAA-NMFS-2016-0014-0001  
Federal Register Number: 2016-03638

**Subject: Petition in support of listing Maui and Kona reef manta ray (*Manta alfredi*) Population as Distinct Population Segments threatened under the Endangered Species Act and to designate critical habitat with the listing.**

To Whom It May Concern:

On behalf of the Hawaii Association for Marine Education and Research (HAMER), I am petitioning in support of listing Maui and Kona reef manta ray (*Manta alfredi*) populations as Distinct Population Segments threatened under the Endangered Species Act and to designate critical habitat with this listing.

I have been studying Hawaii's manta ray populations since 2005 resulting in three peer reviewed publications and a dissertation from the University of Hawaii. This research has described the population size (Deakos et al. 2011), demographics (Deakos 2010), home range (Deakos et al. 2011), reproductive ecology (Deakos 2012) and threats (both natural and anthropogenic) related primarily to Maui's manta ray population. This research, in addition to ongoing photo-identification, tagging and genetic analysis, suggests the Maui population is a distinct population segment that is insular to the Maui County region. Photo-identification and tagging work with the Kona populations suggests it is also a distinct population segment that is insular to the Big Island region and possibly more restricted to the West Coast of the Big Island. Genetic analysis examining the

connectivity between these two population is almost complete and should provide insight into the degree that these populations represent genetically independent stocks.

The current estimated population size for Maui, which represents the Four-Island region of Maui, Molokai, Lanai and Kahoolawe, is approximately 380 individuals. This number is a total number of individuals photo-identified and does not represent animals that have deceased since the catalog began in 2005. The rate of discovery of new animals per unit of effort dropped significantly following the first three years of effort, suggesting newly identified individuals may represent new individuals in the population.

It should be noted that the size demographic data (Deakos 2010) reveals that young individuals are not represented in this population and appear to segregate elsewhere until reaching a certain age or size. New individuals entering the population may be representative of those young individuals maturing and broadening their home range.

After 11 years of mark-recapture data collected, a robust population estimate is currently ongoing and should reveal new information about the Maui population size and more importantly its population trend (increasing or decreasing).

Of significant importance to this population are the anthropogenic threats. One out of every ten individuals in the Maui population shows evidence through scars or amputated cephalic fins, of entanglement in fishing line (Deakos et al. 2011). When gear remains attached to the line it is generally identified as Ulua (Giant Trevally) fishing line, usually cast from the shoreline during the night. Further evidence of entanglement occurred when a satellite tag on a manta ray was pulled from the animal prematurely and the tag surfaced 200 yards away from a popular Ulua fishing area (unpublished data).

Manta rays rely on healthy coral reef habitats for cleaning stations and for the coral, invertebrate and fish spawn on which the manta rays feed. A recent status report of Maui's coral reefs by the Hawaii Department of Aquatic Resources reveals that Maui reefs have suffered a mean of 25% loss of coral cover in the last decade alone. Primary threats include overfishing and land-based sources of pollution. How these threats are impacting manta ray populations is currently unknown and needs to be investigated. In addition, climate change ocean acidification is a looming threat to plankton populations, the primary source of food for the manta rays.

Small populations such as these with low fecundity (Deakos 2012) are at risk for extinction from anthropogenic and environmentally unpredictable events. The combined threats listed with indicators of a possible declining population qualifies these island associating populations as threatened species stock under the U.S. endangered species act.

Our research suggests that the best available science demonstrates that listing the Maui and Kona insular populations of manta rays as distinct population segments that are threatened by anthropogenic impacts is warranted and we recommend that NMFS make a

positive finding on the Petition and commence a status review as required by 16 U.S.C. § 1533 (b)(3)(B).

Thank you for your consideration,

A handwritten signature in black ink, appearing to read 'Mark Deakos', with a large, stylized initial 'M'.

Mark Deakos, *PhD*  
Executive Director, Chief Scientist

Deakos, M. H., Baker, J. D., & Bejder, L. (2011). Characteristics of a manta ray *Manta alfredi* population off Maui, Hawaii, and implications for management. *Marine Ecology Progress Series*, 429, 245-260.

Deakos, M. H. (2010). Paired-laser photogrammetry as a simple and accurate system for measuring the body size of free-ranging manta rays *Manta alfredi*. *Aquatic Biology*, 10(1), 1-10.

Deakos, Mark H. "Ecology and social behavior of a resident manta ray( *Manta alfredi*) population off Maui, Hawai'i." *Dissertation Abstracts International* 72.05 (2010).

Deakos, M. H. (2012). The reproductive ecology of resident manta rays (*Manta alfredi*) off Maui, Hawaii, with an emphasis on body size. *Environmental biology of fishes*, 94(2), 443-456.